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The Regional Municipality of Hamilton – Wentworth

Report on Transfer Station Site Selection

Proctor & Redfern Limited
Consulting Engineers
Hamilton

E.O. 77182 July 1978

The Proctor & Redfern Group
Proctor & Redfern Limited
Consulting Engineers and Planners
20 Hughson Street South
Hamilton, Ont. L8N 2A1 Tel. (416) 529-9432

Mr. C.T.C. Armstrong, Chairman
Steering Committee
c/o Office of the Co-ordinator
The Regional Municipality of
Hamilton-Wentworth
Century 21,
100 Main Street East
HAMILTON, Ontario
L8N 3V9

Dear Sir

Transfer Stations
Hamilton-Wentworth Solid
Waste Management Scheme

Herewith are 20 copies of a brief report on the proposed transfer stations, the implementation of one of the Proctor and Redfern recommendations on the solid waste management system for Hamilton-Wentworth and the subject of tender/proposals and the subsequent Tricil contract with the Region.

The main purpose of this report is to demonstrate that the transfer station siting and hence the buildings and equipment locations, are independent of the location of the disposal facilities. The criteria for the site selections are listed on page 6 of the report which excludes consideration of the location of the disposal facility(ies).

In brief, our conclusion is that the three transfer station sites are easily integrated into any solid waste management system.

Appendix 'A' of this report is the Tricil Limited, June 1978 material which describes the buildings and the machinery as well as the transfer vehicles.

At the back of the report is a number of folded drawings along with the bound-in drawings which will assist in reviewing the whole subject.

Yours very truly

The Proctor & Redfern Group

R. Tait

R. Tait, P. Eng.
Branch Manager.

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THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

REPORT ON
TRANSFER STATION SITE SELECTION

Project E.O. 77182

PROCTOR AND REDFERN LIMITED
Consulting Engineers and Planners
20 Hughson Street South
Hamilton, Ontario, L8N 2A1

June 1978

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No. 6 Collection Areas and Disposal Sites 1972

Map No. 4.1 The Regional Development Pattern (Source: Regional Draft Official Plan)

Map No. 10.1 Road Classifications and Transportation Improvements (Source: Regional Draft Official Plan)

TRANSFER STATIONS - SITE SELECTION

I. INTRODUCTION

In 1972 Proctor and Redfern Limited was appointed by the City of Hamilton, the County of Wentworth and the Ministry of the Environment, to determine the most appropriate solid waste management system for the study area, the study area being the several area municipalities making up or within what is now known as the Regional Municipality of Hamilton-Wentworth. This appointment was subsequently reconfirmed by the Regional Municipality of Hamilton-Wentworth when it took over responsibility for the disposal of solid waste on January 1st, 1974.

In the early stages of the study, two interim reports were prepared. The purpose of these reports was to provide base data and outline a general framework for further, more detailed investigations. In this regard, a number of system objectives were defined. These objectives are listed below (Interim Report No. 2, October 1972).

"D. Objectives for an Area-wide Waste Management System

i). To optimize the utilization of the new Hamilton incinerator (SWARU)

ii). To optimize collection procedures for all types of wastes with respect to total distances between sources of wastes and ultimate disposal sites

iii). To delineate as clearly as possible the areas of municipal responsibility as distinct from those of the private sector

iv). To minimize the possibility of atmospheric, soils or water pollution by the disposal techniques chosen

v). To maximize the opportunities for resource recovery as a prelude to recycling of usable waste materials

vi). To ensure complete coverage of the entire Hamilton-Wentworth area, and

vii). To ensure that the system is appropriate for the growth period that is anticipated will occur over a period of time extending for not less than twenty years."

From the above system objectives as well as having regard for the local geographical constraints and the

commitment by the Region to operate SWARU, it was realized and recommended that transfer stations should be established to be integral parts of any system selected.

II. TRANSFER STATION LOCATIONS

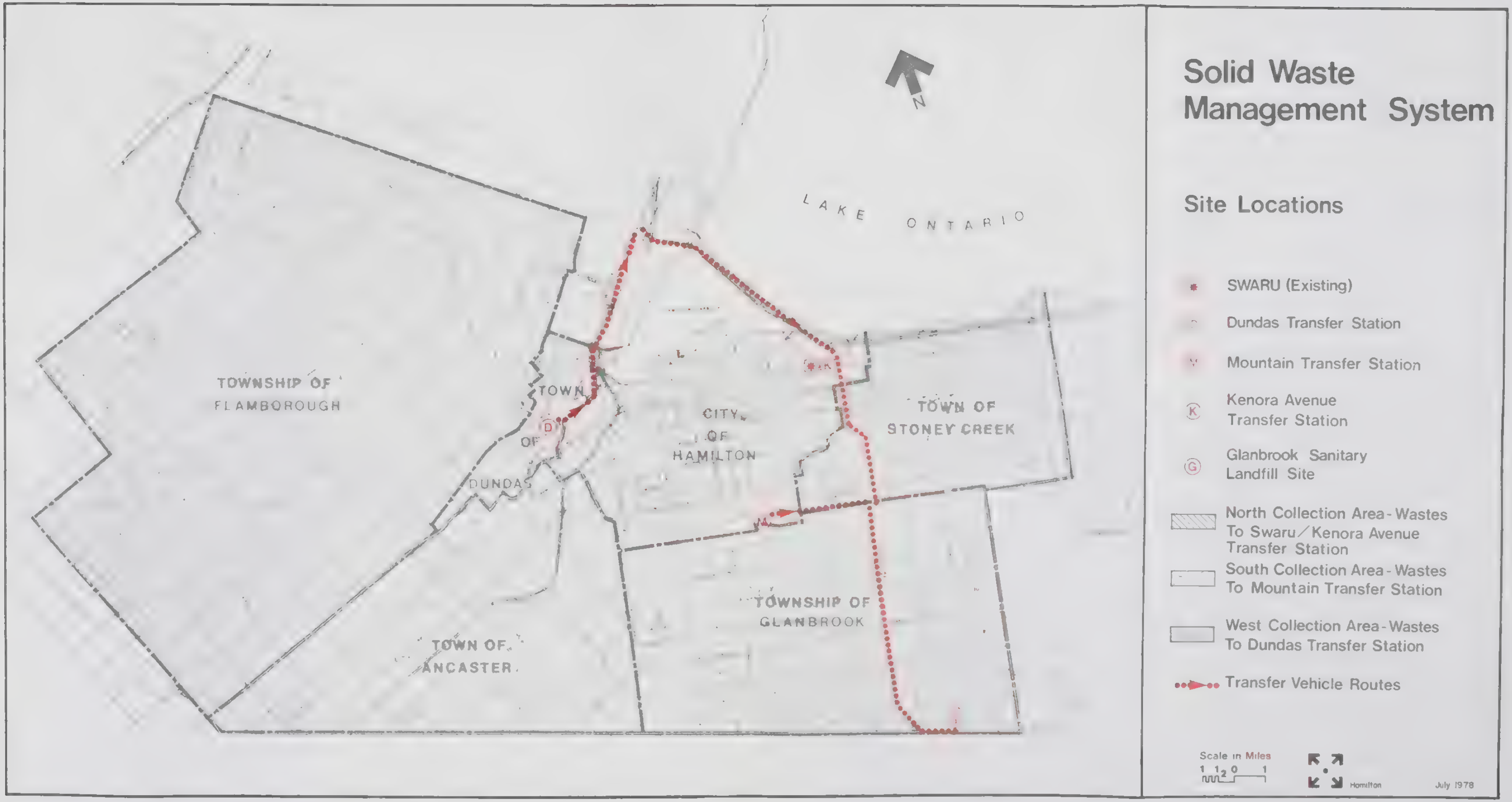
A. Collection Areas

Once it was established that transfer stations would be utilized, the next step was to determine the number of stations required. To perform this task, an investigation was undertaken to establish reasonable "garbage sheds" within the study area (ref. to Dwg. No. 1, June 1978).

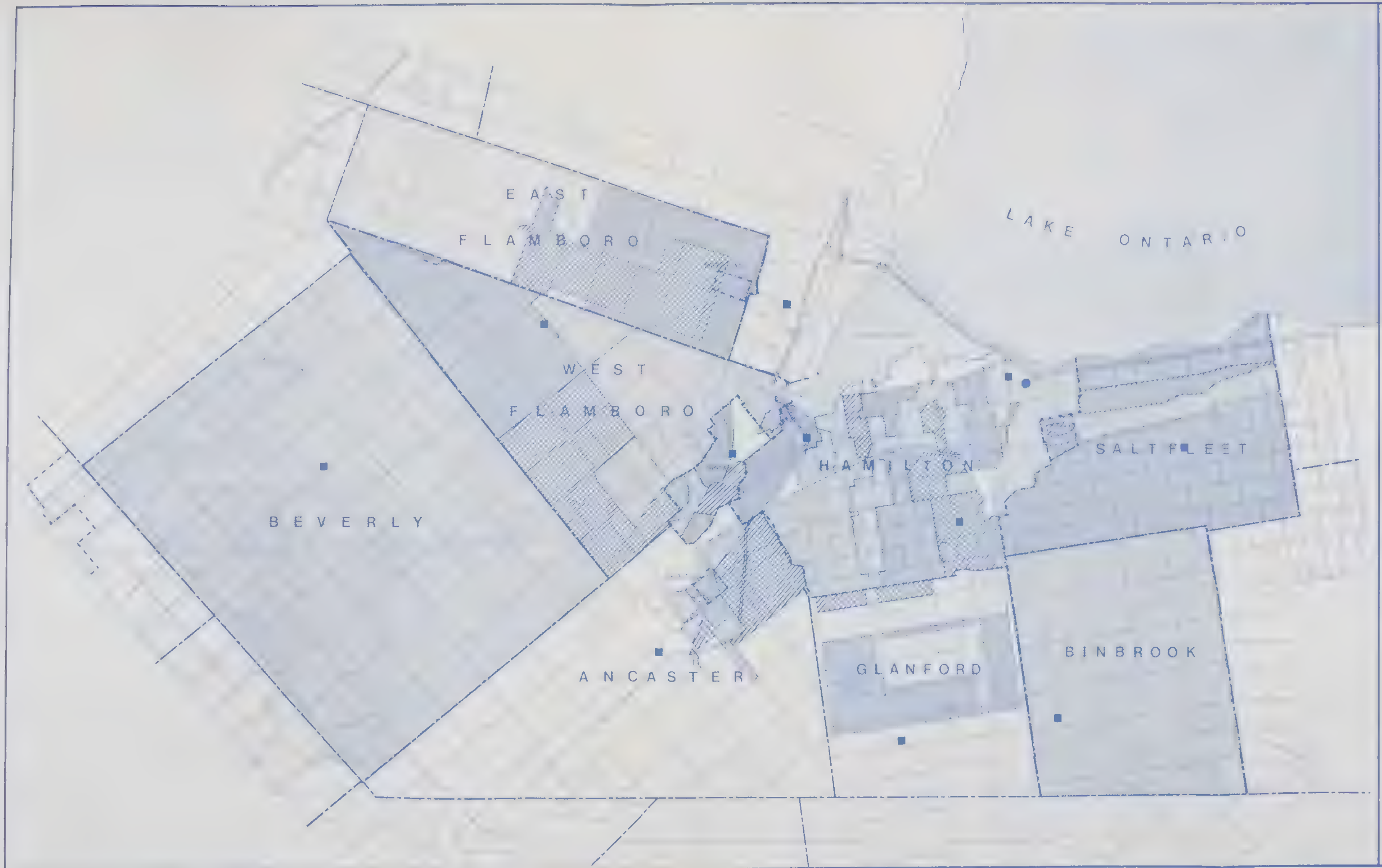
The three shed areas, shown on the enclosed plan were developed after reviewing geographical features, waste generation rates, transportation constraints, economic factors and ultimately regional development patterns (ref. to Dwg. No. 6, May 1972 and Maps 4.1 and 10.1 , Regional Draft Official Plan).

The three "garbage sheds" or new collection areas are described below:

Solid Waste Management System


Site Locations
SWARU (Existing)
Dundas Transfer Station
Mountain Transfer Station
Kenora Avenue Transfer Station
Glanbrook Sanitary Landfill Site
North Collection Area - Wastes To Swaru ⁄ Kenora Avenue Transfer Station
South Collection Area - Wastes To Mountain Transfer Station
West Collection Area - Wastes To Dundas Transfer Station
Transfer Vehicle Routes
N
LAKE ONTARIO
TOWNSHIP OF FLAMBOROUGH
TOWN OF DUNDAS
CITY OF HAMILTON
TOWN OF STONEY CREEK
TOWN OF ANCASTER
TOWNSHIP OF GLANBROOK
D
K
M
G
Scale in Miles
1 1/2 0 1
Hamilton
July 1978

Collection Areas & Disposal Sites 1972



Legend

■ Municipal Disposal Sites

● Incinerator

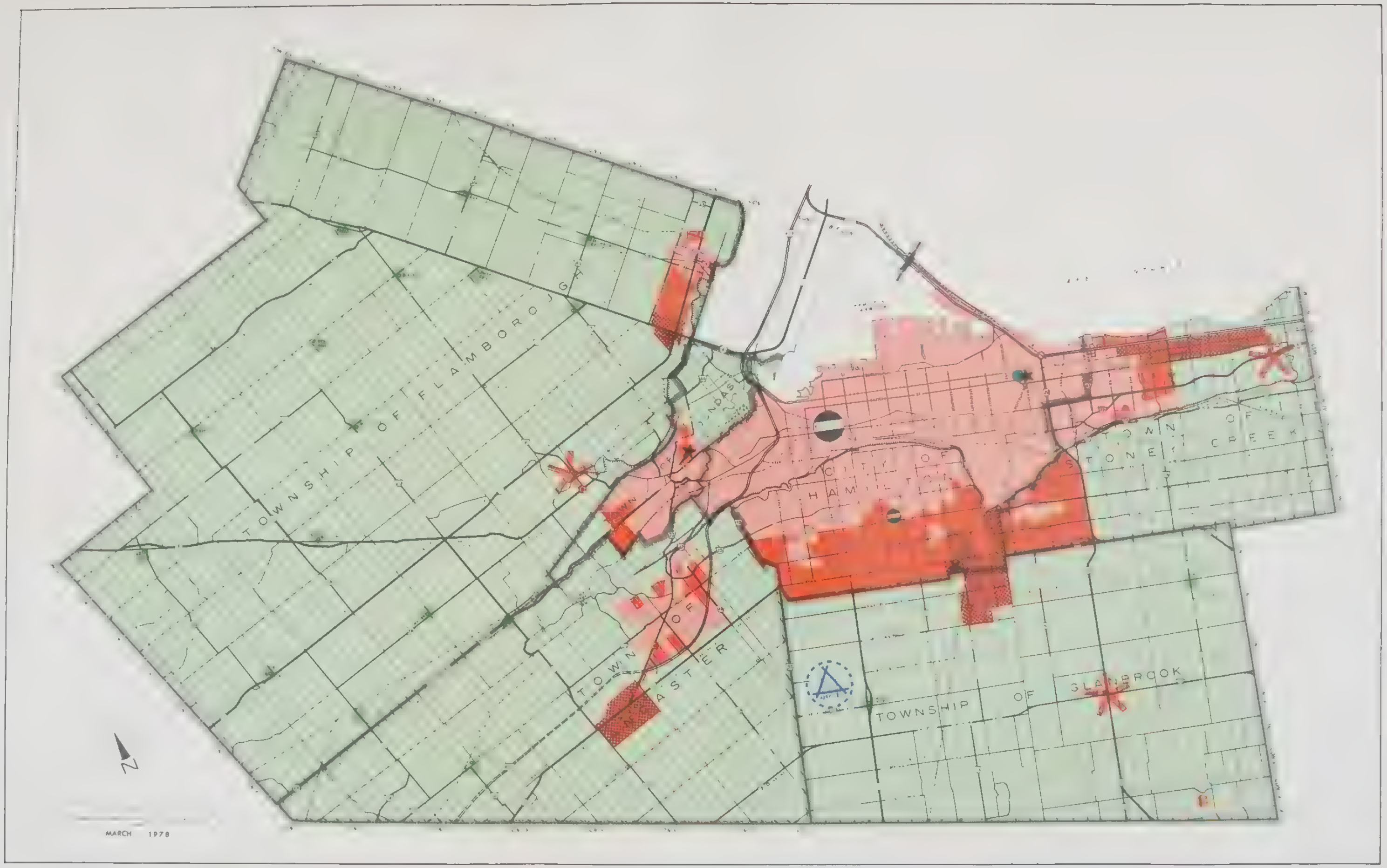
▨ Collection Areas

Hamilton-Wentworth Waste Management Study

Proctor & Redfern Limited
Consulting Engineers and Planners

Scale In Miles
1 ½ 0 1

Map No. 6
May 1972



MAP NO. 4.1

LEGEND

URBAN SETTLEMENT POLICY AREAS

- EXISTING DEVELOPMENT 🟥
- PROPOSED DEVELOPMENT
  - INDUSTRIAL ▨
  - RESIDENTIAL & RELATED USES 🟥
  - CENTRE ●
  - URBAN SETTLEMENT ✳
  - EXPANDED AIRPORT AND RELATED INDUSTRIAL DEVELOPMENT △

RURAL SETTLEMENT POLICY AREAS ●

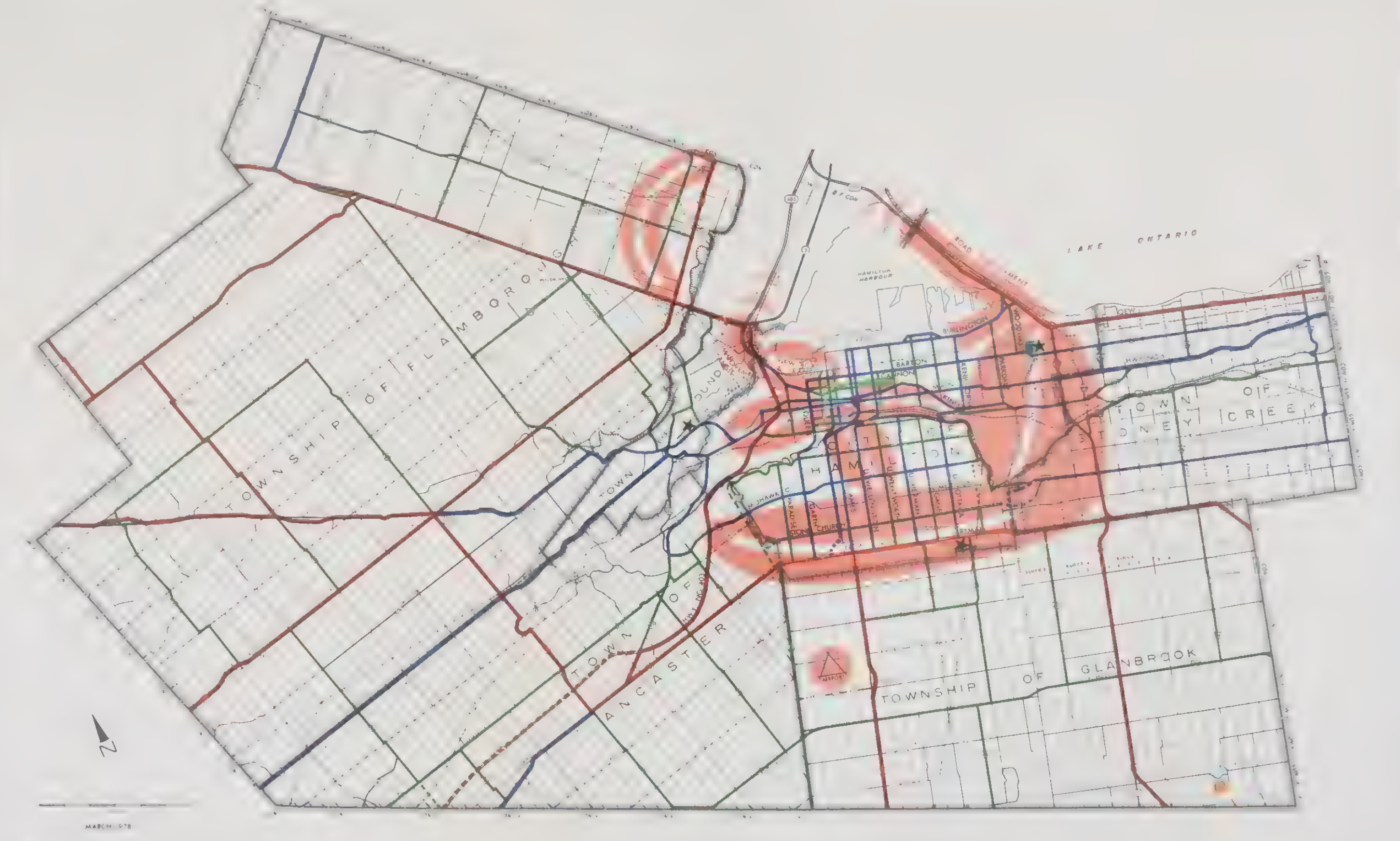
RURAL POLICY AREAS 🟩

SOLID WASTE MANAGEMENT SYSTEM

- SITE LOCATIONS
  - SWARU ●
  - TRANSFER STATION ★
  - GLANBROOK SANITARY LANDFILL SITE ●

THE REGIONAL DEVELOPMENT PATTERN

Planning & Development Department
Hamilton - Wentworth Region



MAP NO.10.1

LEGEND

	EXISTING	PROPOSED
INTER - REGIONAL HIGHWAY	━	- - -
MAJOR ARTERIAL	━	- - -
MINOR ARTERIAL	━	- - -
NEW ROADS & NEW TRANSIT	⬭	
ROAD IMPROVEMENTS	═	
OTHER IMPROVEMENTS	●	

SOLID WASTE MANAGEMENT SYSTEM

SITE LOCATIONS

SWARU	●
TRANSFER STATION	★
GLANBROOK SANITARY LANDFILL SITE	●

ROAD CLASSIFICATIONS AND TRANSPORTATION IMPROVEMENTS

Planning & Development Department
Hamilton - Wentworth Region

1. North Collection Area - includes those sections of the City of Hamilton and the Town of Stoney Creek below the Escarpment.

2. South Collection Area - includes those sections of the City of Hamilton and Town of Stoney Creek above the Escarpment as well as the Town of Ancaster and the Township of Glanbrook.

3. West Collection Area - includes the Town of Dundas and the Township of Flamborough.

B. Transfer Station Siting

With the establishment of the three previously mentioned collection areas or sheds, the next step was the siting of the transfer stations within these areas. The following criteria were defined to aid in the site selections:

a). Locate in areas as close to established haul patterns as possible

b). Locate at/or near major transportation corridors

c). Locate in areas of conforming land use.

d). Locate in areas which satisfy need for economics and/or convenience for the user.

The purpose of these criteria was to minimize detrimental effects imagined or otherwise on area residences while at the same time minimizing system transportation costs.

It was quickly realized that three site locations in the vicinity of some of the existing solid waste management facilities would meet all of the above criteria for siting of transfer stations.

Accordingly, the investigation was concentrated in the areas surrounding SWARU, Upper Ottawa Street Landfill Site

and the Dundas Landfill Site. A number of sites were considered and after reviewing these with the Regional staff the selection of the three sites discussed herein was confirmed.

C. Transfer Station Locations

1. Kenora Avenue Transfer Station

The Kenora Avenue Transfer Station site is located adjacent and to the east of SWARU within the North Collection Area (ref. to Site Plan).

The site is bounded on the east by the SWARU site (Kenora Avenue), on the west by the Centennial Parkway North, on the north by the Q.E.W. and on the south by the C.N.R. main line.

This location satisfies the four above-listed criteria in the following manner:

a). The existing haul patterns have been established by the use of SWARU. The impact due to increased traffic in this area will not seriously affect the surrounding neighbourhood.

b). The site is located in an existing industrial neighbourhood. The site use conforms to the Official Plan and the zoning by-law (land use and Official Plans are available on request).

c). Vehicular access to the transfer station site is from Kenora Avenue through the SWARU property. The user traffic exits from the transfer station site onto Centennial Parkway North, a four-lane arterial road. The Q.E.W. is within a 1/4 mile of the site.

d). SWARU-Kenora Transfer Station Site is as close to the centre of the collection or shed area as it is possible to be having regard for the three previous criteria.

2. Mountain Transfer Station

The Mountain Transfer Station is sited in a proposed industrial subdivision at the intersection of Rymal Road (Hwy. No. 53) and the future southern extension of Upper Ottawa Street (ref. to Site Plan).

The siting criteria are met in the following manner:

a). The site is located within a mile of the existing Upper Ottawa Street Landfill Site. This fact plus being located at the intersection of two major arterial roads (Rymal and Upper Ottawa) establishes that use of the new transfer station site conforms to the existing haul pattern.

b). The station is located in an industrial park. The Official Plan permits the use of this site for a transfer station. The City of Hamilton has approved the necessary zoning by-law.

c). Access to the site will be from Upper Ottawa Street extension but the approach will be from both Upper Ottawa Street and Rymal Road (Hwy. No. 53) which are both major arterial roads. The traffic generation created by the site will be less than at Upper Ottawa Street Site and the impact on the area roads should be a reduction from the present situation where there has been a significant dependence upon the Upper Ottawa Street Site with previous minimal use of SWARU.

d). This site satisfies the criteria for economic and convenience for the user having regard for

the previous three criteria.

3. Dundas Transfer Station

The Dundas Transfer Station is located within a proposed industrial area in Dundas (ref. to Site Plan). The proposed site is bounded on the east by a hydro right-of-way and a former Dundas Landfill Site, on the south by Olympic Drive and the Ontario Hydro Transformer Station and on the north and west by open land presently zoned for agriculture. This site meets the said siting criteria in the following ways:

a). All traffic entering the site will use Cootes Drive and Olympic Drive which are major roads. The former landfill site had already established a haul pattern. Any increased traffic should be handled adequately by the surrounding arterial roads.

b). At present, the subject site land is zoned agricultural. On the east and south the land is zoned industrial (land use and Official Plan available on request). The Town of Dundas has approved the by-laws for both an amendment to the Official Plan and zoning change specifically to allow the station to be located as proposed. The nearest residence to the site is approximately 850 feet away. The line of site between the said residence and the proposed transfer station is blocked by a significant stand of trees approximately 100 feet wide.

c). The access to the site is via Olympic Drive and Cootes Drive both major arterial roads.

d). This site satisfies the criteria for economic and convenience for the user having regard for the previous three criteria.

III. CONCLUSIONS

The three sites discussed herein meet the criteria listed. The integration of the proposed three transfer stations into any solid waste management system is easily achieved. The wastes thus collected at the said three sites can be treated on-site in the event that resource recovery technology and economics would indicate the validity of such treatment. Until the on-site ultimate treatment of wastes does occur, the primary and initial function of the proposed transfer stations, that is for transferring wastes delivered in a myriad of vehicles of all sizes to larger uniform transfer vehicles, will suit delivery to a resource recovery location or any point of waste disposal in the Region, be it SWARU incineration and landfilling or new technology treatment elsewhere or any combination thereof.

APPENDIX 'A'

TRICIL LIMITED SUBMISSION

TRICIL LIMITED

REGION OF HAMILTON-WENTWORTH
TRANSFER STATION SYSTEM

SUBMITTED: IN SUPPORT OF APPLICATION FOR APPROVAL BY ONTARIO MINISTRY OF THE ENVIRONMENT

DATE: JUNE 1978

TRICIL LIMITED
101 QUEENSWAY WEST
SUITE 400
MISSISSAUGA, ONTARIO
L5B 2P7

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ENVIRONMENTAL CONSIDERATIONS	6
WASTE TO BE TRANSFERRED	9
DESCRIPTION OF INDIVIDUAL TRANSFER STATIONS	10
TRANSFER VEHICLES	13
CONCLUSION	14

ATTACHMENTS

FIGURE 1	SCHEMATIC OF PROCESS
FIGURE 2	PHOTOGRAPH OF TRACTOR-TRAILER UNITS
EXHIBIT I	DRAWINGS & ARTISTS SKETCH - DUNDAS TRANSFER STATION
EXHIBIT II	DRAWINGS & ARTISTS SKETCH - MOUNTAIN TRANSFER STATION
EXHIBIT III	DRAWINGS & ARTISTS SKETCH - KENORA AVENUE TRANSFER STATION

INTRODUCTION

After many years of study, the Region of Hamilton-Wentworth concluded that a comprehensive, flexible, total waste management system, which includes three transfer stations, its existing incinerator (SWARU), and a landfill, is the only practical and viable way to manage the waste generated in the municipality.

Tricil has been contracted to build these transfer stations on three industrial sites carefully selected by the Region, after much deliberation.

In addition to handling all waste not incinerated at SWARU the transfer stations are designed to provide complete back-up capacity in the event of the SWARU being temporarily inoperative.

The two largest transfer stations will be designed so as to accommodate easily the implementation of resource recovery operations at a later date.

GENERAL DESCRIPTION OF TRANSFER STATIONS

All three transfer stations are based on sound transfer station design, accepted Ministry standards and Tricil's successful Kingston Transfer Station. This facility has been in operation since early 1976 and has been proven to be both efficient and reliable.

Although all three stations are similar in concept they are adapted to meet the individual capacity requirements of each location.

The main functional components of the transfer stations include; the yard area, used for vehicle parking and manoeuvring, the receiving area of the building where incoming vehicles unload, the waste conveying operation, and the compaction operation.

The unloading, conveying and compaction operations are housed completely inside a high quality concrete block building. The receiving area and compaction area vehicle entrances are provided with large doors capable of securing the building when not in operation.

In brief, vehicles enter the site at a weigh scale facility and proceed to the front of the receiving area,where an attendant directs them into the receiving area for unloading onto a large receiving floor. A front-end loader then pushes the waste from the receiving floor onto the conveyor system, the lower part of which is located in a shallow pit below the level of the receiving floor. The conveyor system transfers the waste to the compaction area. In the case of the Dundas Transfer Station the conveyor discharges directly into the compactor hopper.

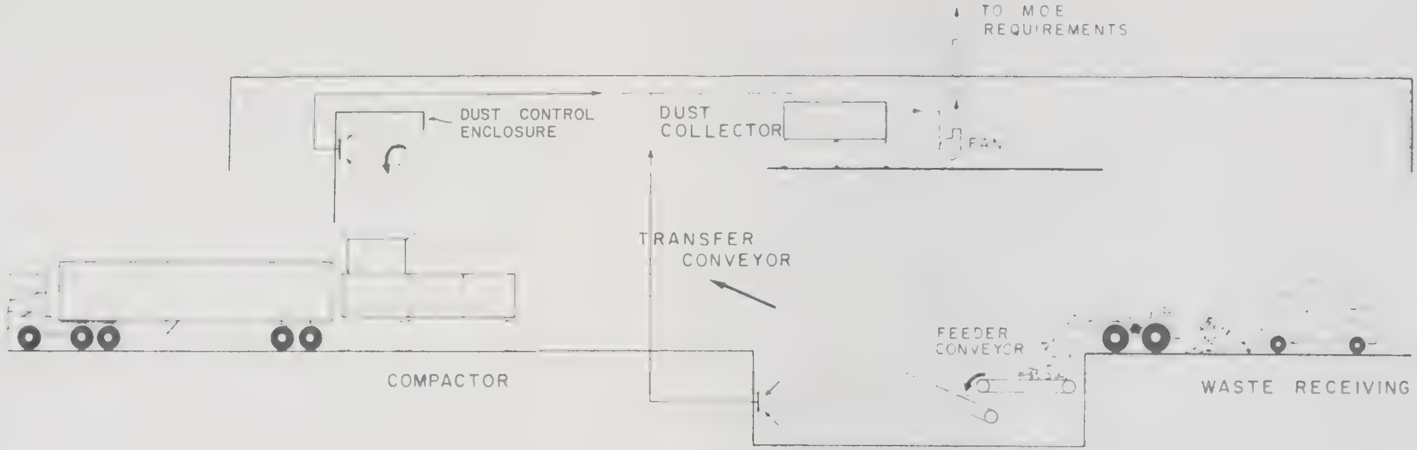
At the Kenora Avenue and Mountain Stations a stream diverter is employed to direct waste discharging from the conveyor to either of two compactors. The diverter mechanism performs a similar function to the one used in the Ministry of the Environment's Resource Recovery facility at North York. The use of a diverter allows one conveyor system to feed two compactors.

The compactors force the waste into heavy-duty 75 cubic yard transporters for haulage to landfill.

It is planned that, at the Kenora Avenue and Mountain Stations, the waste stream could be directed to a future resource recovery operation in a separate building. This would be done by intercepting the waste as it drops from the top of the existing transfer conveyor system and conveying it over to the resource recovery building.

The equipment will be fitted with a system of electrical interlocks and sensors which will shut down the system in the event of a malfunction, such as the transporter hook-up to the compactor being insecure, or there being a blockage of material in the hoppers or chutes. This system has been employed successfully at the Kingston Transfer Station.

Each transfer station will have a low profile section to accommodate the maintenance function and the employee facilities for the station.



TRICIL TRANSFER FACILITY

Regional Municipality of Hamilton - Wentworth

Figure 1

ENVIRONMENTAL CONSIDERATIONS

Location

The stations are to be located on sites which have been chosen after much investigation by the Region. This has resulted in sites which will minimize the effects of the transfer stations on the neighbourhood.

In designing the transfer stations measures have been taken both inside and outside the buildings to reduce any possible undesirable effects:

Dust Control

Each transfer station will be equipped with a system to minimize the escape of dust into the working area. This system will be comprised of a duct system for collecting air in areas of dust generation, and a bag-house unit for the filtration of the air. The system will be designed to meet Ministry of the Environment requirements. Outside the buildings, dust generation by traffic will be small as the yard areas will be paved.

Waste Water

No water is used in the process and the only contaminated water resulting from the transfer station operation is generated by the occasional washing of the floors and equipment. This water will drain to a sump and be pumped to the sanitary sewer.

Odours

Odours from the operation will be minimal since there will be no storage of waste for longer than a few hours. This is borne out by the existing operations in Kingston and at other transfer stations.

Fire Control

The effects of the accidental outbreak of fire will be reduced by the high capacity sprinkler system in each station

Litter Control

The high chain-link fences around the perimeters will stop any movement of wind-blown litter off the site.

Noise

Noise generated at the transfer station locations can be considered in two categories, the noise from traffic entering and leaving the stations, and the noise of the station itself in operation.

The traffic noise at each transfer station will vary depending on the level of activity and the types of vehicles delivering waste. In general, since the vehicles will be travelling slowly on level ground, they would produce only normal traffic noise levels. However, mechanically unloading packer vehicles will produce heavy traffic noise levels for short periods (approximately 40 seconds) while ejecting their loads in the receiving area.

The noise generated by the operation of the plant itself is attributable mainly to the conveyors, the compactors, the air collection system and the front-end loader in the receiving area. The noise emitted from the transfer stations will be most significant opposite the receiving area entrance (front) and of lesser significance on the other three sides.

In order to estimate the level of noise resulting from the operation of the transfer stations, noise data collected at the Kingston Transfer Station has been superimposed on an assumed background noise level of 50dBA for each of the proposed stations. In this way, noise levels at the boundaries of all three properties have been estimated to be 66dBA opposite the front of the stations and 53dBA opposite the other three sides. Although these levels can be considered satisfactory for the locations, an attempt will be made to reduce them during equipment design and selection.

WASTE TO BE TRANSFERRED

The stations will receive all acceptable residential, commercial and industrial waste from the Region with the exception of that incinerated at SWARU.

Wastes which would not be acceptable include:

- construction debris;
- earth fill;
- broken concrete;
- asphalt and other inert materials;
- tree stumps;
- construction timber;
- bundles of metal strapping and the like;
- abandoned motor vehicles;
- agricultural waste;
- dead animals;
- hauled liquid industrial waste;
- hauled sewage and hazardous waste as these terms are defined in Regulation 842, RRO, 1970, and amendments thereto;
- pathological and infectious waste;
- snow.

DESCRIPTION OF INDIVIDUAL TRANSFER STATIONS

As stated previously all three transfer stations are similar conceptually. However, the specific use of each station requires differences in the capacity and amount of equipment in each, and in the transfer station buildings themselves.

The following is a summary of the equipment and building requirements along with the annual rated capacity for each transfer station:

1) Dundas Transfer Station

Equipment: one - 6' wide steel pan conveyor
one - 11 cubic yard transfer station compactor (equivalent to Dempster TSP 11)

Building - net assignable area:

receiving floor	3200 sq.ft.
compaction area	600 sq.ft.
office/service area	700 sq.ft.

Annual rated capacity: 130,000 tons

NOTE See Exhibit I

Site Plan - Drawing No. 1226C-P1
Architectural Elevation - Drawing No. 1226C-P2

2) Mountain Transfer Station

Equipment:
one - 6' wide steel-pan horizontal feeder conveyor
one - 6' wide steel-pan inclined conveyor
one - 11 cubic yard transfer station compactor with provision for installation of a second when future volumes warrant it
one - stream diverter

Building - net assignable areas:

receiving floor	3200 sq.ft.
compaction area	1300 sq.ft.
office/service area	800 sq.ft.

Annual rated capacity:
130,000 tons(one compactor)
220,000 tons(two compactors)

NOTE See Exhibit II

Site Plan - Drawing No. 1229C-P1
Architectural Elevation - Drawing No. 1229C-P2

3) Kenora Avenue Transfer Station

This station can be considered to be two transfer stations, similar to the Mountain Station placed back-to-back.

Equipment:
two - 6' wide steel-pan horizontal feeder conveyors
two - 6' wide steel-pan inclined conveyors
two - stream diverters

three - 11 cubic yard transfer station compactors with provision for installation of a fourth when future volumes warrant it.

Building - net assignable areas:

receiving floor	6400 sq.ft.(2 @ 3200 sq.ft.)
compactor area	2600 sq.ft.
office/service area	1400 sq.ft.

Annual rated capacity: 350,000 tons (3 compactors)
440,000 tons (4 compactors)

NOTE See Exhibit III

Site Plan - Drawing No. 1228C-P1
Architectural Elevations - Drawing No. 1228C-P2

TRANSFER VEHICLES

All three transfer stations will be served by tractor-trailer units similar to those used at most transfer stations including; Kingston, Metro Toronto, and the Ministry of the Environment's Resource Recovery facility.

The compactor and trailer hook-up configuration at each station will be such that any of the transfer vehicles can service any of the transfer stations.

The trailers will be 75 cubic yard, compaction-type fully enclosed units similar to those manufactured by Dempster. A hydraulic system powered by the tractor will assist in the compaction by providing a resistance to the compactor and provides the means of ejecting the load at the final disposal area.

The units are designed to meet all highway and environmental regulations.

See Figure No. 2

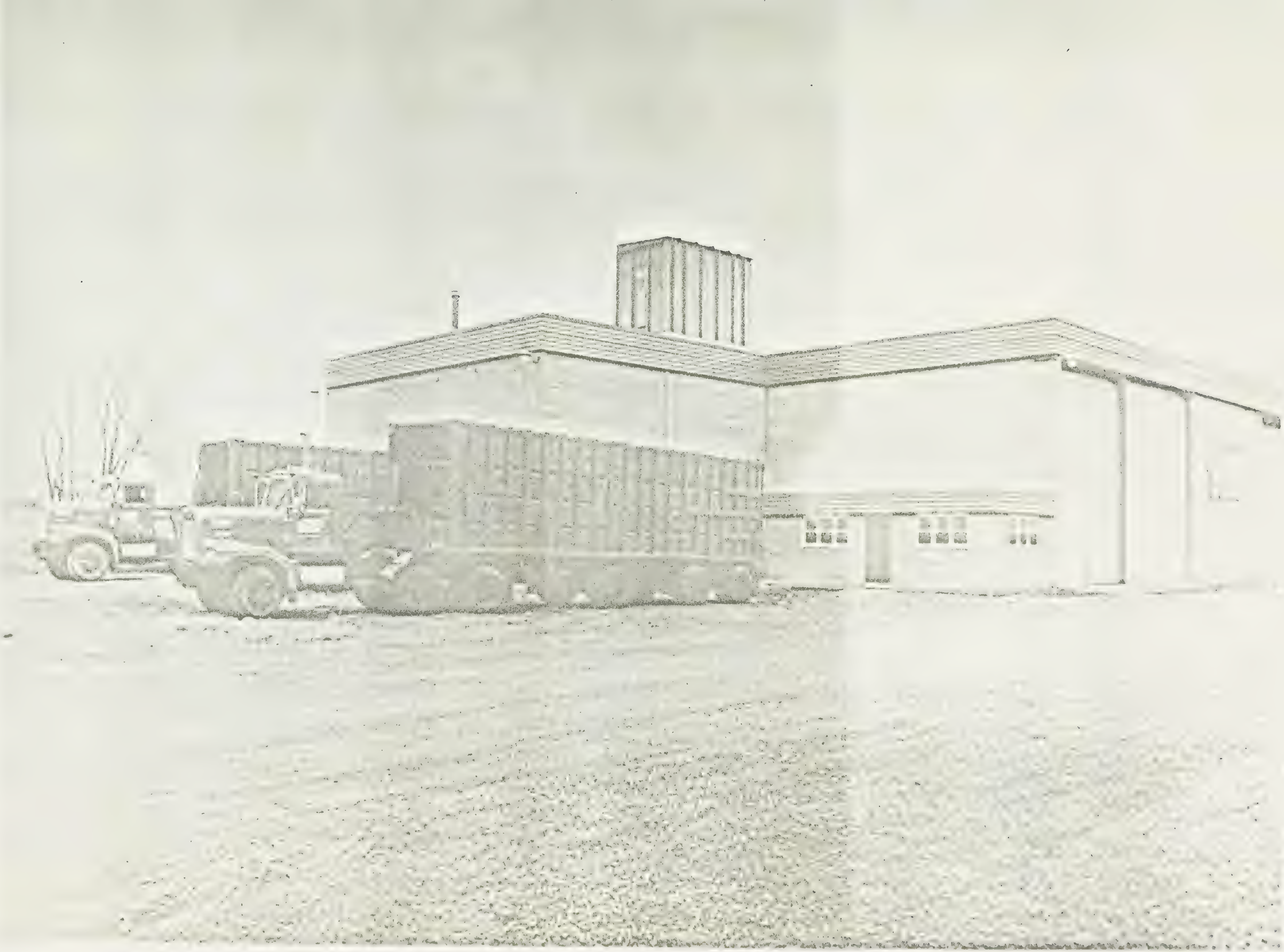
CONCLUSION

The transfer station system would immediately reduce the traffic and littering problems of direct haul to landfill, and would reduce the overall cost of delivery to landfill.

The combined annual rated capacity of the stations, 790,000 tons, will adequately accommodate the Region's waste for the forseeable future,even during periods when SWARU is not operating.

The design of the two largest stations provides for the implementation of on-site resource recovery at a later date. Recoverable waste from the smallest station could be processed either at SWARU or at one of the larger transfer stations.

The construction of this proposed system will provide an immediate required improvement to the Region of Hamilton-Wentworth's waste handling system, and will provide a functional, flexible system which can accommodate the complete needs of the Region for the forseeable future.



Tricil's Waste Transfer/Recovery Plant, Kingston, Ontario

Figure 2

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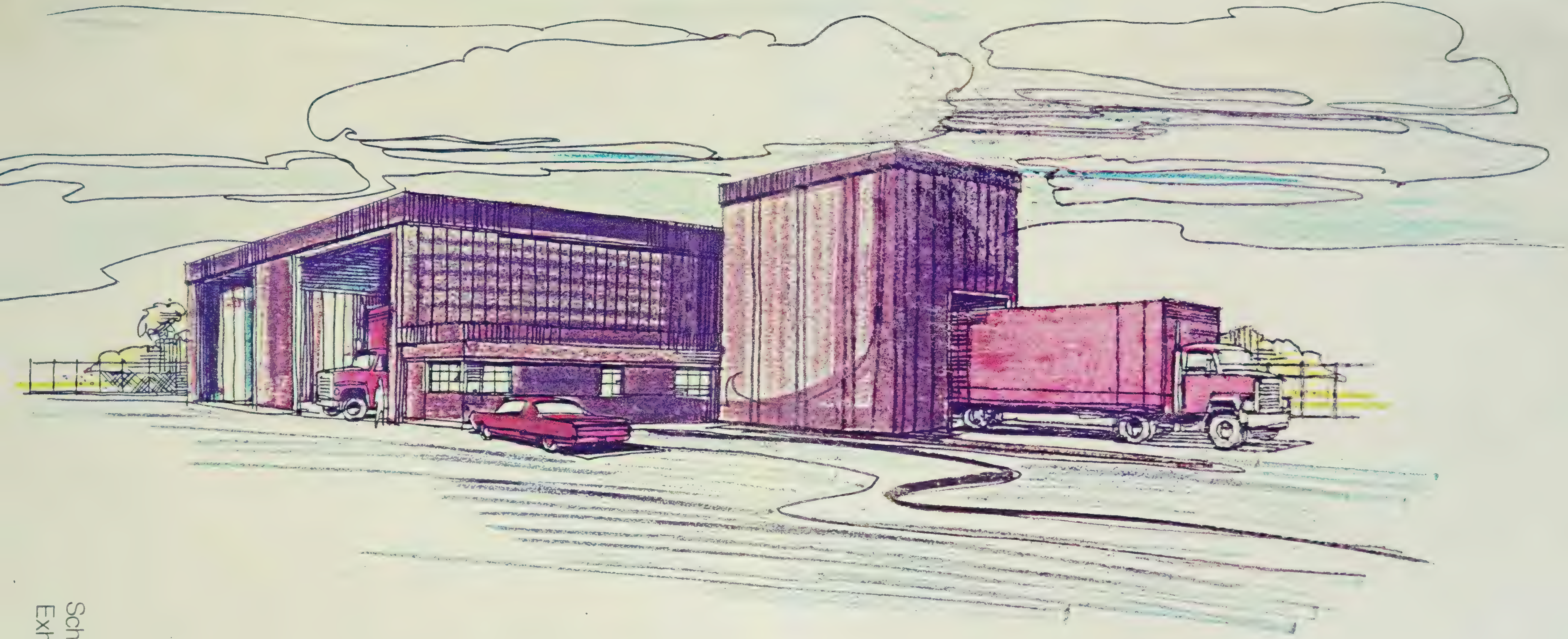

Dundas Transfer Station

Schedule 10
Exhibit 1B

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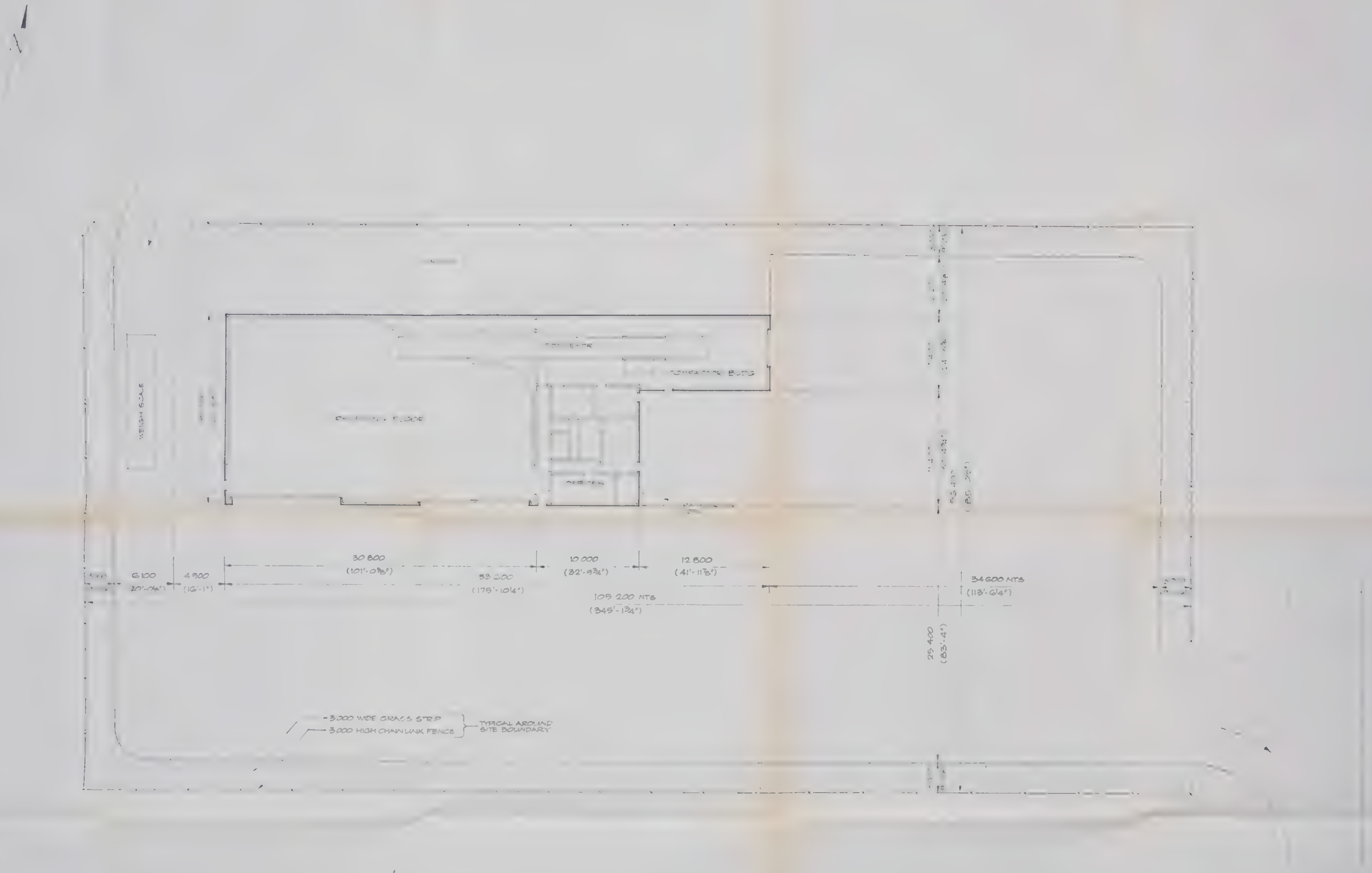


DUNDAS TRANSFER STATION
SCALE - 1" = 100'

PART LOT 19, CONCESSION I
TWP OF WEST FLAMBOROUGH
PLAN Nº RB-D-145 SURVEYS
THE REGIONAL MUNICIPALITY of
HAMILTON-WENTWORTH
DEPARTMENT of ENGINEERING

SCHEDULE 10
EXHIBIT 1A

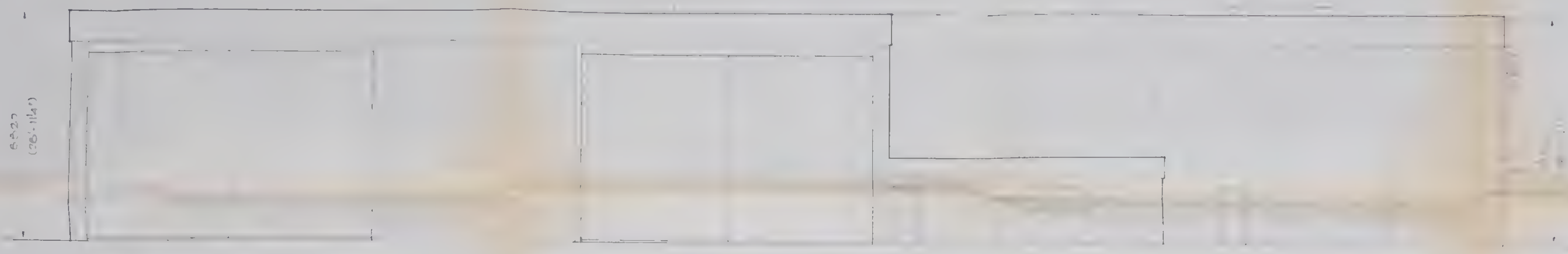
TRICIL LIMITED

DUNDAS TRANSFER STATION

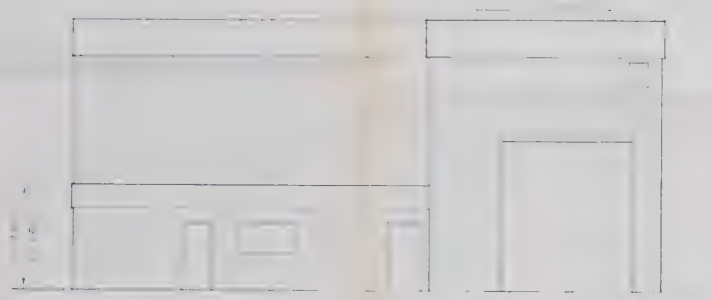
SITE PLAN

J. D. LEE ENGINEERING LIMITED
CONSULTING ENGINEERS KINGSTON BRANTFORD ONT

			DESIGN			SCALE	JOB NO	DATE
			DWN			DWG NO	SHEET	REVISION
DATE	REVISION	CHK	QUANT					



[illegible] ELEVATION



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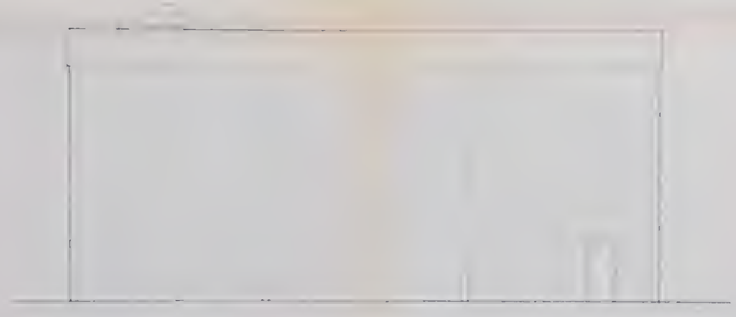

[illegible] ELEVATION

CA3ONHWQ9078 R27

[illegible] LIMITED

[illegible] TRANSFER STATION

ARCHITECTURAL ELEVATIONS

J. D. LEE ENGINEERING LIMITED
CONSULTING ENGINEERS – KINGSTON BRANTFORD ONT

			DESIGN			SCALE	JOB NO	DATE
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DATE	REVISION	CHK	QUANT.					

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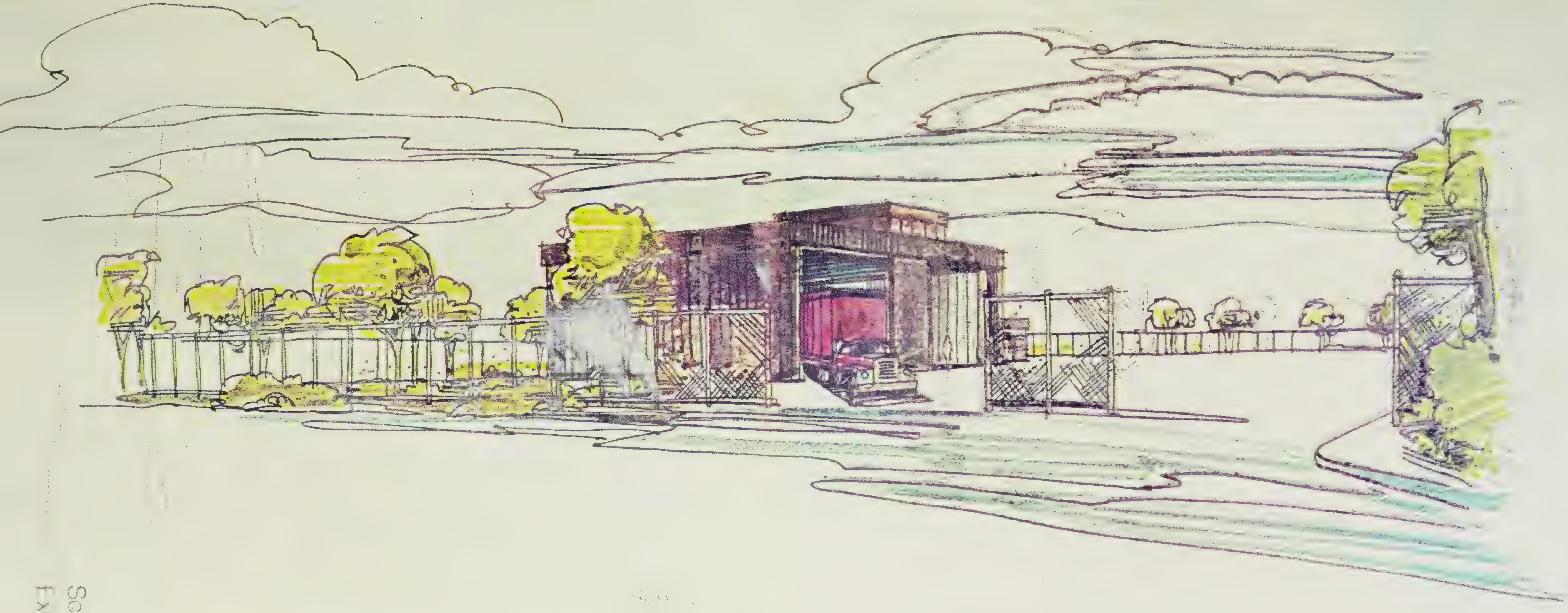
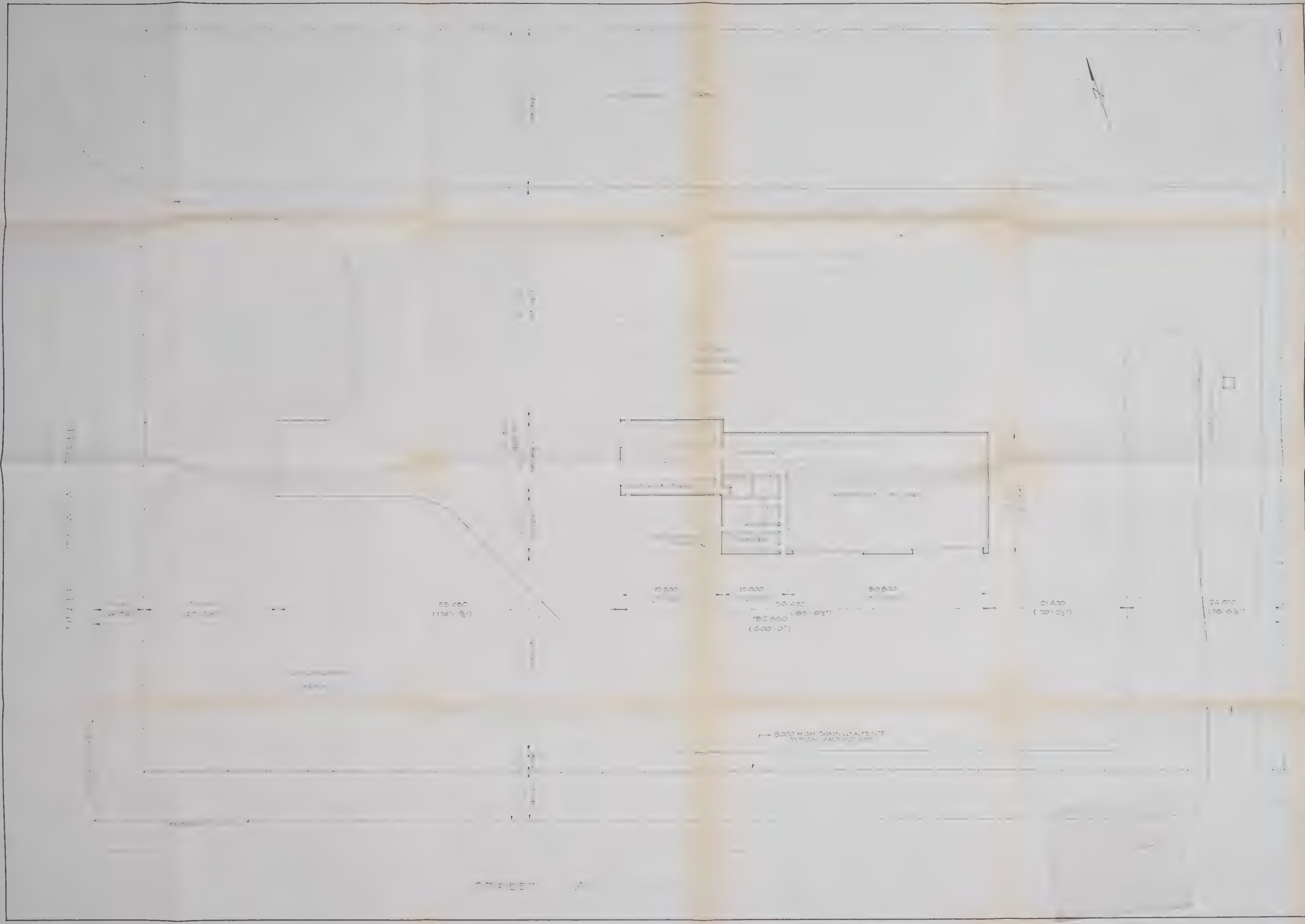


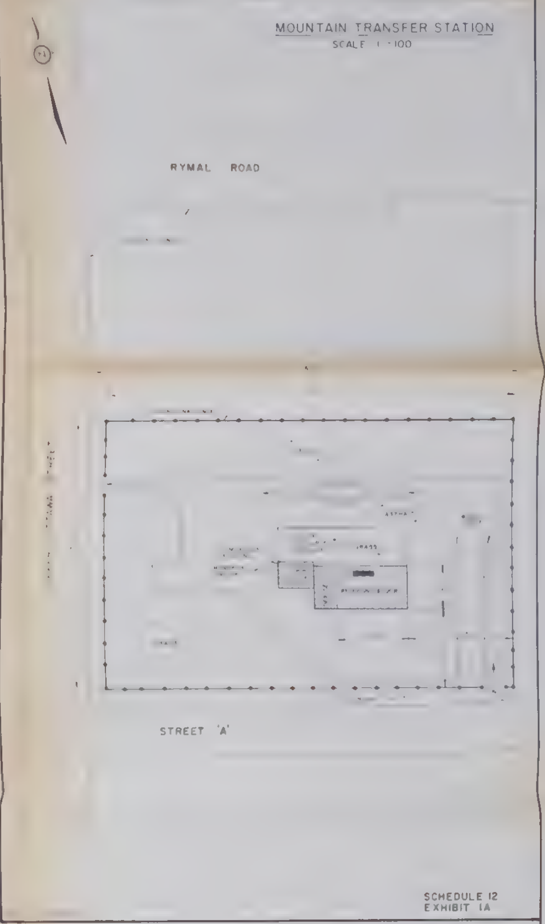
Mountain Transfer Station

Schedule 12
Exhibit III



MOUNTAIN TRANSFER STATION

SCALE 1:100



SCHEDULE 12
EXHIBIT 1A

30NHWQ9078R27

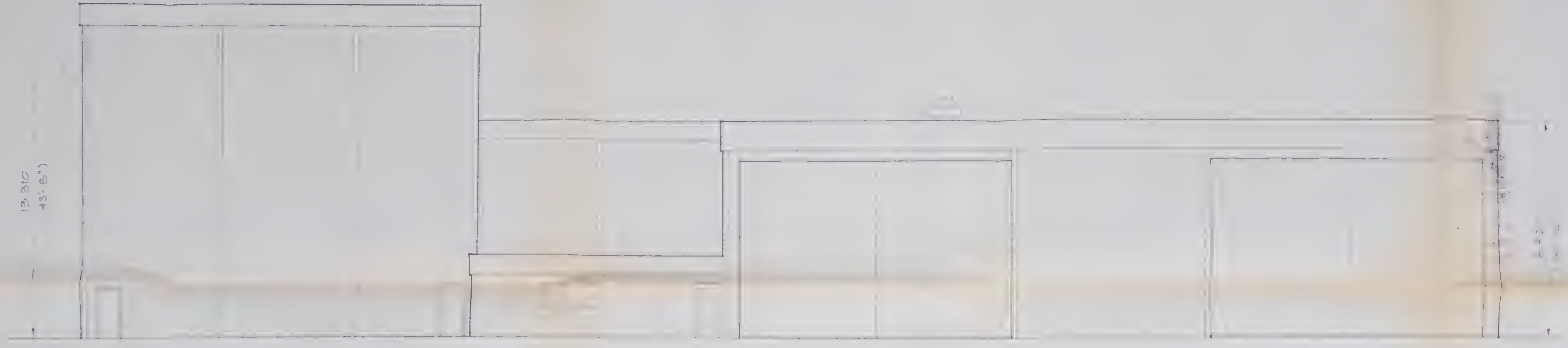
[illegible]

MOUNTAIN TRANSFER STATION

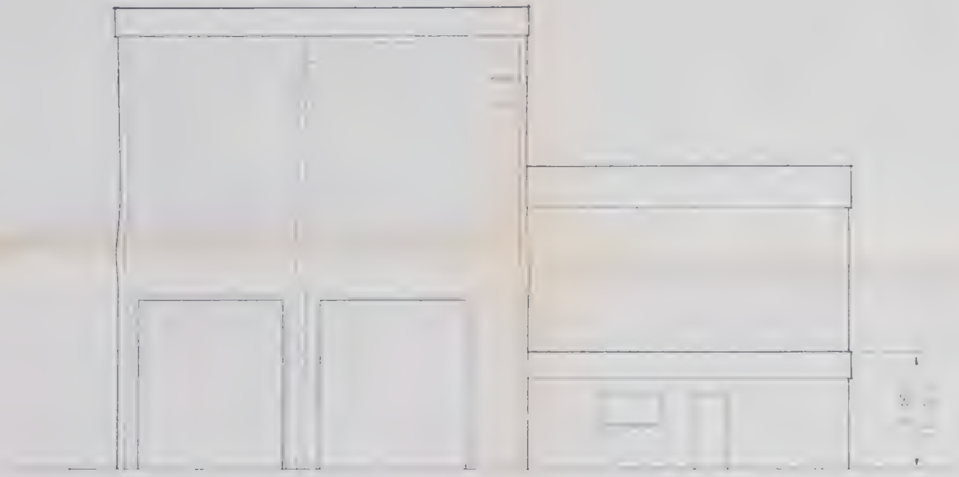
SITE PLAN

J D LEE ENGINEERING LIMITED
CONSULTING ENGINEERS KINGSTON BRANTFORD ONT

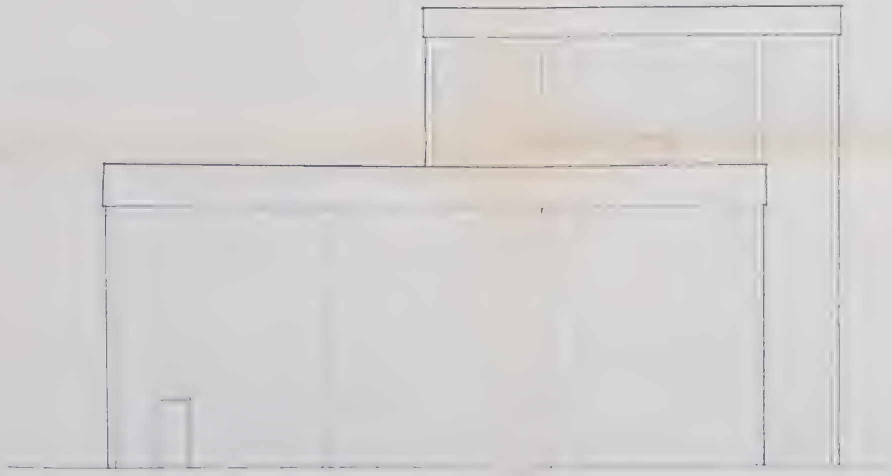
			DESIGN			SCALE	JOB NO.	DATE
			DWN			DWG NO	SHEET	REVISION
DATE	REVISION	CHK	QUANT					



SOUTH ELEVATION



WEST ELEVATION



EAST ELEVATION

NOTE:

BRACKETED DIMENSIONS ARE IMPERIAL UNIT EQUIVALENTS OF METRIC DIMENSIONS GIVEN

CA3ONHWQ9078R27

TRICIL LIMITED

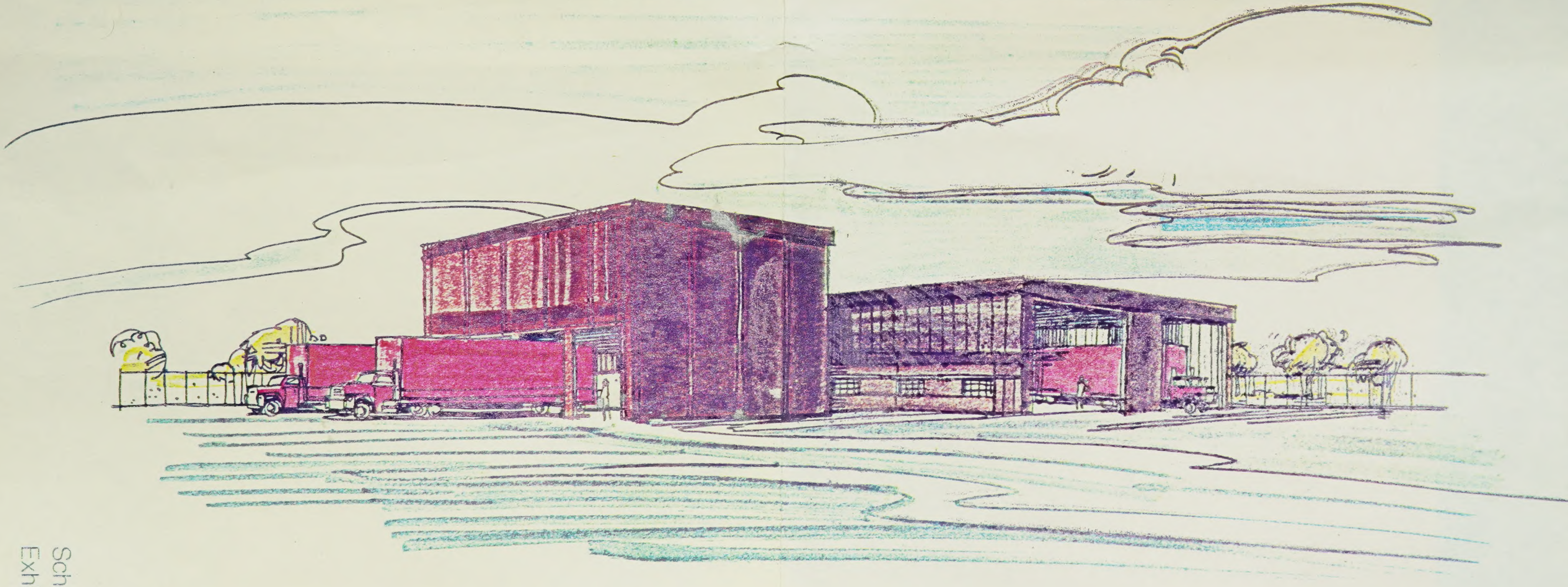
MOUNTAIN TRANSFER STATION

ARCHITECTURAL ELEVATIONS

J. D. LEE ENGINEERING LIMITED
CONSULTING ENGINEERS - KINGSTON BRANTFORD ONT

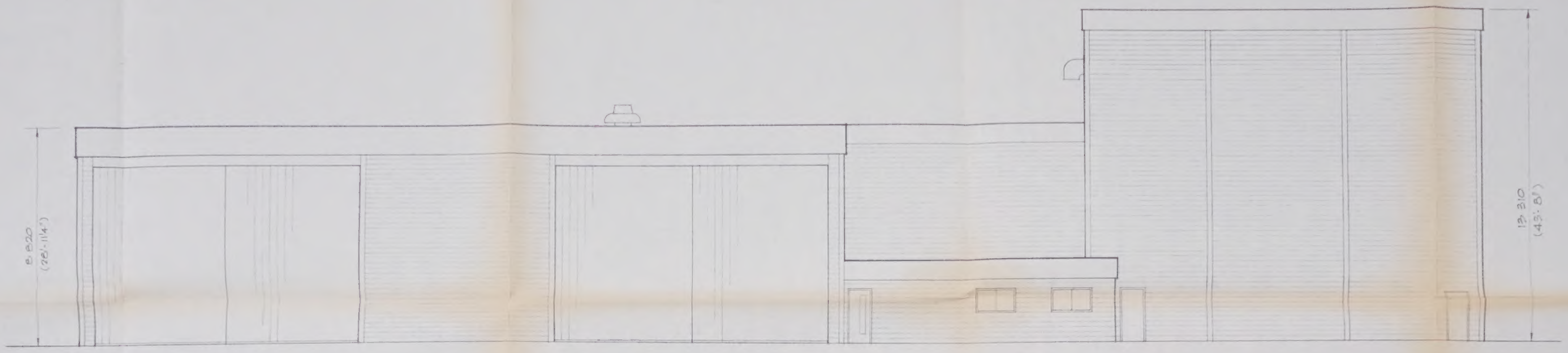
			DESIGN			SCALE	JOB NO	DATE
			DWN			DWG NO	SHEET	REVISION
DATE	REVISION	CHK	QUANT					

CA3ONHWQ90
78R27

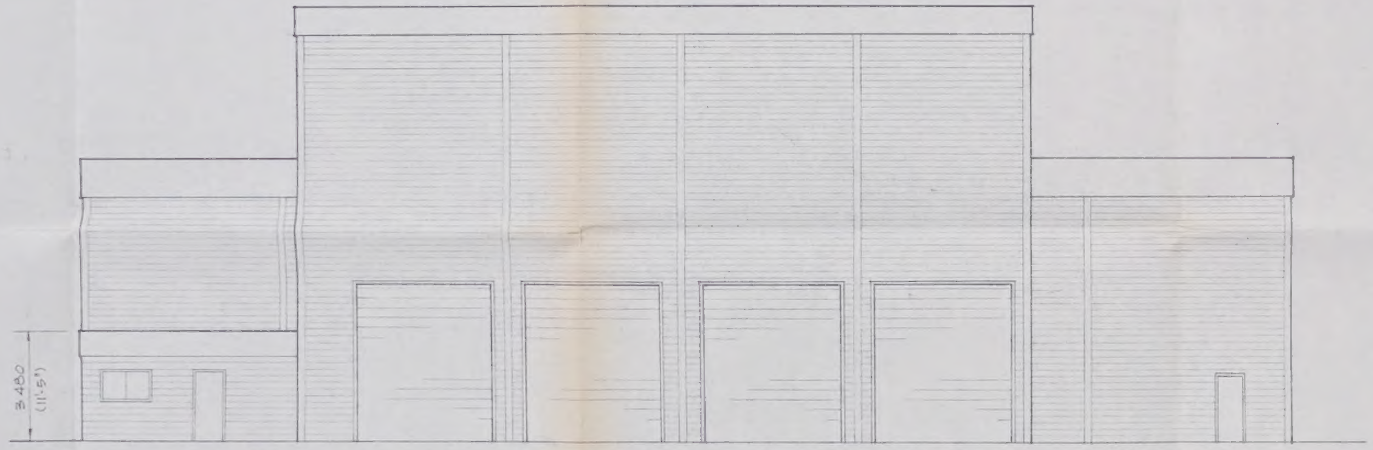


Kenora Transfer Station

Schedule 14
Exhibit 1B



WEST ELEVATION



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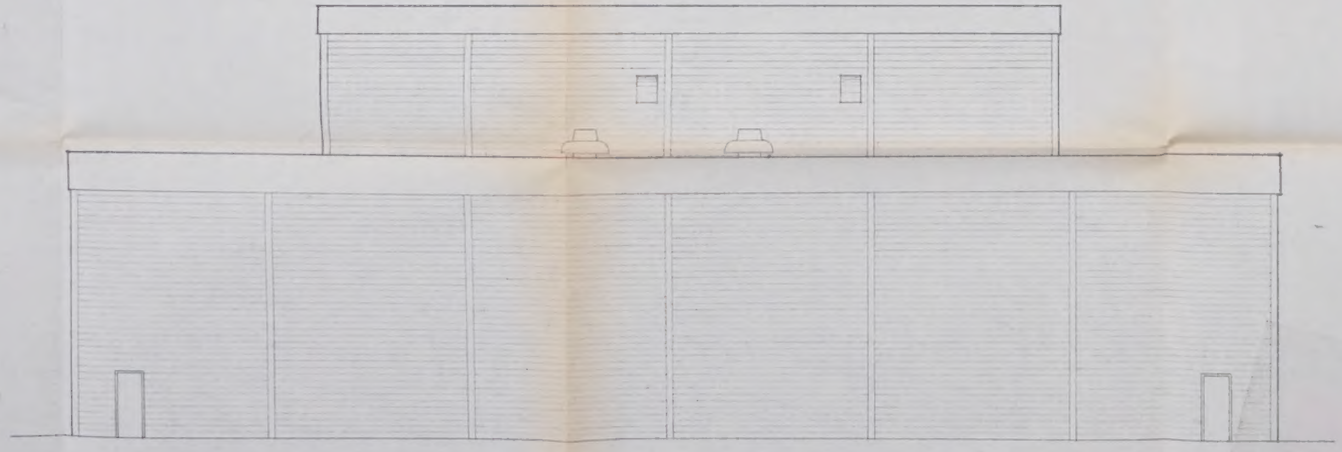


NORTH ELEVATION

NOTE:

BRACKETED DIMENSIONS ARE IMPERIAL UNIT EQUIVALENTS OF METRIC DIMENSIONS GIVEN.

CA3ONHWQ9078K27

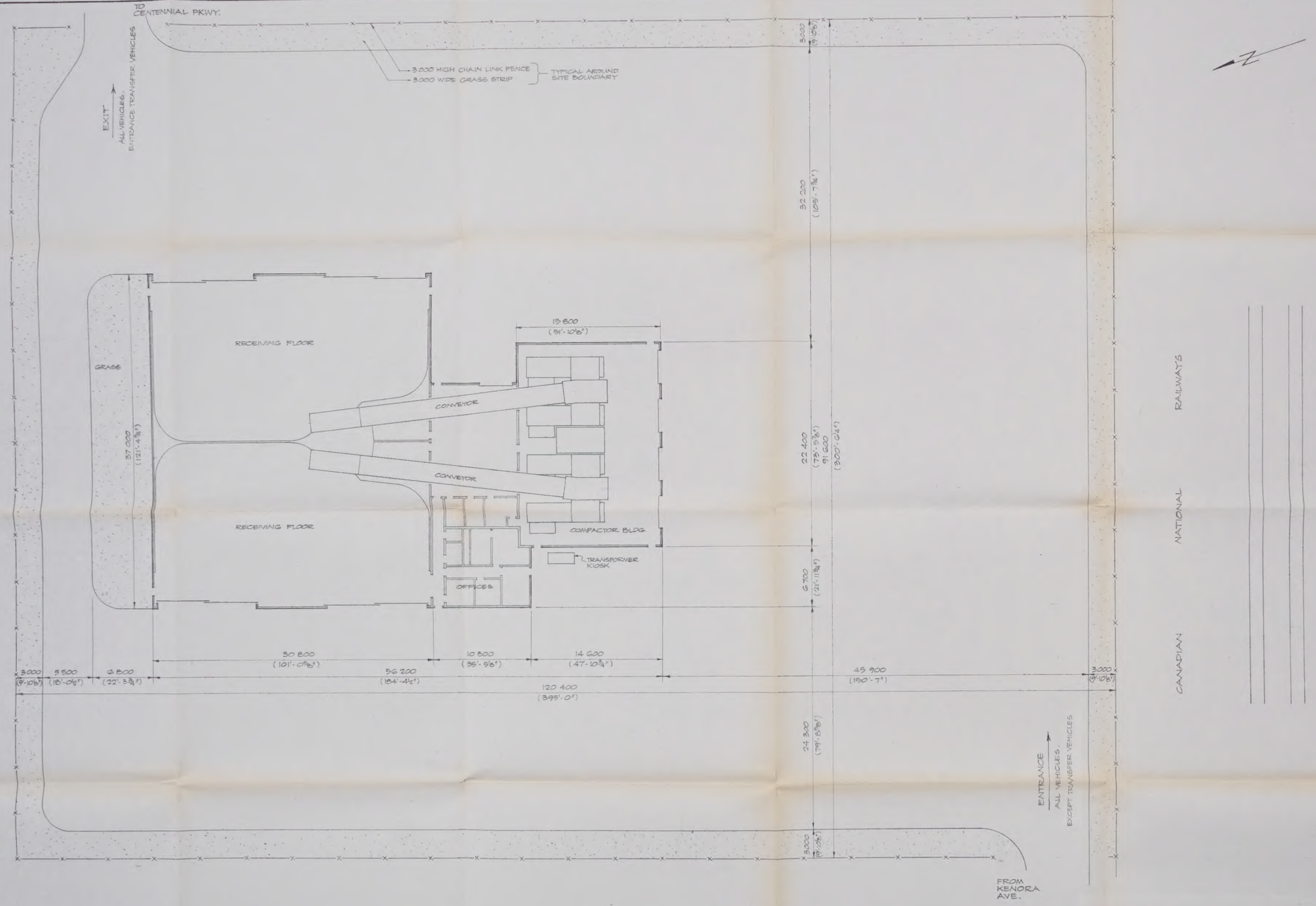
TRICIL LIMITED
KENORA TRANSFER STATION
ARCHITECTURAL ELEVATIONS

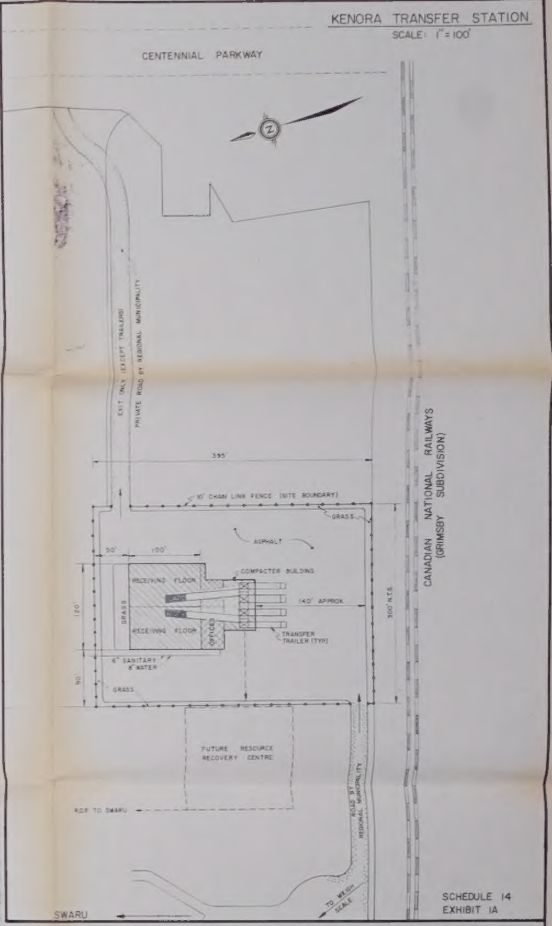
J. D. LEE ENGINEERING LIMITED
CONSULTING ENGINEERS – KINGSTON. BRANTFORD. ONT.

	DATE	REVISION	CHK.
2	28 JUL 78	COMP. BLDG. ROOF REV'D HEIGHT - HATCHES DELETED	M.S.
1	19 JUN 78	IMPERIAL DIM'NS.	M.S.

DESIGN
DWN. M.S.
QUANT.

SCALE	JOB NO.	DATE
1:100	1311 K	12 MAY 78
DWG. NO.	**SHEET**	**REVISION**
1228 C	P2	2




KENORA TRANSFER STATION

SCALE: 1" = 100'

SCHEDULE 14
EXHIBIT 1A

NOTE:

BRACKETED DIMENSIONS ARE IMPERIAL UNIT EQUIVALENTS OF METRIC DIMENSIONS GIVEN.

CA3ONHWQ9078R27

TRICIL LIMITED

KENORA TRANSFER STATION

SITE PLAN

J. D. LEE ENGINEERING LIMITED
CONSULTING ENGINEERS – KINGSTON, BRANTFORD, ONT.

DATE	REVISION	CHK
15 JUN 78	DIMENSIONS & KEY PLAN	M.S.

DESIGN
DWN. M.S.
QUANT.
SCALE 1 : 200
JOB NO. 1311 K
DATE 12 MAY 78
DWG. NO. 1228 C
SHEET P1
REVISION 1

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